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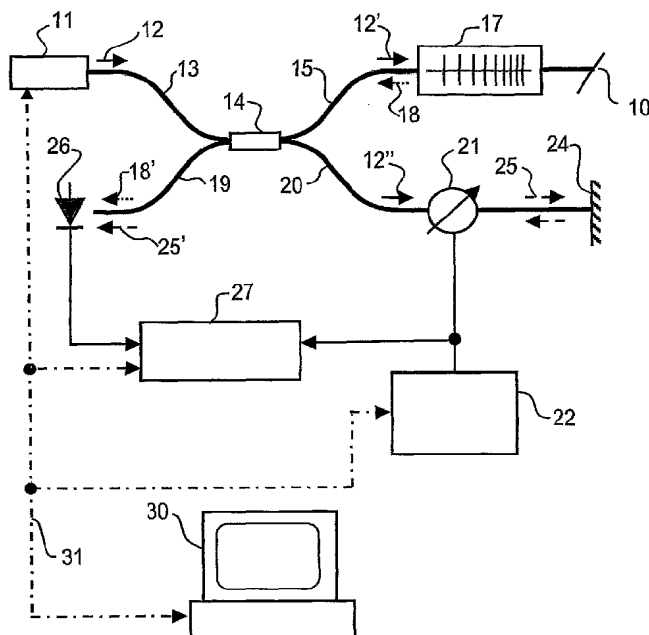
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(54) Title: SYSTEM AND METHOD FOR MEASUREMENT OF OPTICAL PARAMETERS AND CHARACTERIZATION OF MULTI-PORT OPTICAL DEVICES



(57) Abstract: System and method for measurement of optical parameters and characterization of multiport optical devices constituted by process control systems, one or more sources of optical test signal (11) (tunable laser source), optical circuit including optical fiber and several other optical components arranged so as to constitute an interferometric optical arrangement, optical connectors, optoelectronic interfaces, photodetectors, analogical electronic circuits, digital electronic circuits for digital signal processing and electronic circuits for data acquisition, the test and reference optical signals traversing paths with any lengths, that can be identical or distinct, the optical signal traversing at least one of said paths of interferometer being phase- and/or frequency-modulated. The signals of both interferometer arms are summed at a same photodetector (26) that translates to the electric domain the heterodyning of the optic signals, which contain the information of the optical characteristics of the DUT (17) (device under test), the transfer of the optical signals between the diverse ports of the DUT being described by means of the Optical "S"-Parameters where each "S<sub>xy</sub>" parameter is represented using the formalism of Jones (Jones matrix) and/or the formalism of Muller (Muller matrix) and where all the determinations of the optical

characteristics of the DUT (17) (bandwidth, phase, time delay, chromatic dispersion, 2nd order chromatic dispersion, reflectance, reflection coefficient, transmittance of the port "y" to the port "x" and vice versa, transmission coefficient of the port "y" to the port "x" and vice versa, insertion loss, polarization dependent loss, polarization mode dispersion (DGD/PMD), 2nd order DGD, etc.) are based on said "S<sub>xy</sub>" parameters.

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